

Noun Phrase Construction in Academic Research Articles

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**Abstract**

The study explored the syntactic complexity and semantic function of noun phrases in TESOL academic research articles. The corpus was comprised of 60 articles (572874 words) from three TESOL journals including TESOL Quarterly, TESOL Journal, and Journal of Second Language Writing. POS tagging was added to the corpus using TagAnt 1.2.0 (Anthony, 2015). A list of 20 highest-frequency nouns was generated using wordlist tool in AntConc 3.3.4 (Anthony, 2014). Based on the specific contexts of these nouns, the researcher analyzed the syntactic complexity of noun phrases in light of their pre-modifiers and post-modifiers. The semantic function of noun phrases was analyzed based on the excerpts generated by the Concordance tool. The results showed that the complexity of noun phrases was dependent on the complexity of their premodifiers and postmodifiers. A complex postmodifier usually contained more than one element, embedding prepositional phrases, nonfinite clauses, or relative clauses. The use of noun phrases enabled the writer to increase cohesion and coherence

within and across the text. The findings were of value to both L2 learners and young scholars in developing their writing performance for the target journals in the field.

*Keywords:* noun phrase, syntactic complexity, semantic function, research articles, corpus

## 1. Introduction

Today, globalization results in the need to develop “written communication across languages and cultures not only possible but essential in business, education, and many other fields” (Celce-Murcia, Brinton & Snow, 2014, p.223). The ability to write in English, especially for academic purposes has become more important than ever. Becoming a proficient academic writer is a challenging and multifaceted endeavor, both for first language (L1) and second language (L2) writers (Crossley & McNamara, 2009). Writing for academic journals is not always an easy task to many young scholars in the field. In order to be published in academic journals of the field, those manuscripts should meet many requirements of those target journals, of which academic writing style is of great importance.

According to Wang (2012), there are several factors that possibly influence academic writing in second language, for example voice, organization, or sentence patterns. The sentence patterns in L2 writing depends heavily on the syntactic complexity, which refers to how sophisticated the production units or grammatical structures are (Foster & Skehan, 1996). According to Ortega (2003), the degree of sophistication of particular syntactic structures such as subordination, coordination, noun phrases, partly reflects the writer’s performance in using variety of sentence patterns. The ability to use various structures of noun phrases can be seen

as an indicator of complexity of advanced L2 writing, particularly writing for academic journals in the field of TESOL.

Although many studies have been done on structures of noun phrases, almost none of the studies focused on investigating construction of noun phrases in academic writing, specifically writing for TESOL academic journals. The study by Adamson and Gonzalez-Diaz (2009) undertook a review of structure in English noun phrase from the historical perspective. There was not any analysis in relation to the use of noun phrases in academic writing. Likewise, Breban's (2010) work only concentrated on analyzing components of a postdeterminer in the English noun phrase synchronically and diachronically. Even though Gómez (2009) conducted a corpus-based research on noun phrase structure, the only focus of this study was on analysis of N + N sequences based on written and spoken corpora collected from the Present Day English. Martinez-Insua and Perez-Guerra (2011) simply discussed primary features of the noun phrase from different theoretical angles. No empirical study of noun phrase construction was conducted by these two authors. Though the corpus-based research by Jonsson (2010) analyzed noun phrase construction, his corpus was collected from the written texts of high achieving high school students. It was obvious that the collection of these written texts could not be seen as an collection of academic texts published on journals of TESOL. It goes without saying that the analysis of noun phrase construction in academic writing has not emerged as the central focus of the previous studies.

The previous studies have provided a deeper understanding of noun phrase construction in English, but none of them concentrated on investigating structure of noun phrases in TESOL academic research articles. The previous studies chiefly analyzed the noun phrase construction from theoretical and historical perspective whereas an empirical study of noun phrase

construction in academic research articles is particularly useful to the development of L2 writing performance among L2 learners, teachers, and even young scholars. The understanding of the complexity of noun phrase construction in academic research articles may potentially help L2 teachers and learners pay much more attention to syntactic complexity and variety of sentence patterns in teaching and learning academic writing. Meanwhile, the understanding of noun phrase construction and its functions in construction of meaning in TESOL academic research articles may potentially enable young scholars to improve their writing performance for the target journals in the field. In order to fill the earlier gap, the current project aimed to explore the following research questions.

1. How complex are noun phrase constructions in academic research articles?
2. What is the function of noun phrases in construction of meaning in texts?

## **2. Literature review**

### **2.1. Definition of noun phrases**

As described in Aarts and Aarts (1988), a noun phrase can be seen as a headed phrase in which the head is the only obligatory constituent. The head of a noun phrase is defined as “the dominant member of that noun phrase” (De Mönnink, 2000, p.20). According to Gomez (2009), the construction of an NP is always recursive since a number of dependents can be added to the head element to make two common structures: simple vs. complex noun phrases (e.g. the dog vs. the lovely hairy black dog with a red collar standing at the door of the house). As can be seen in the example above, some dependents may precede the head and others may follow it. Those component parts offer a wide range of possible combinations in noun phrases, which gives rise to different structural patterns (Gomez, 2009).

## 2.2. Structural patterns of noun phrases

As Greenbaum & Quirk (2007) argued, an NP may contain three fundamental elements, the head noun, premodification, and postmodification. Premodification comprises all the items placed before the head, notably determiners, adjectives, and nouns (Greenbaum & Quirk, 2007). In other words, a premodifier may consist of determiners, adjectives and adjectives with participle endings (-ing), regular nouns, nouns with the s-genitive and adverbials (Jonsson, 2010). On the contrary, postmodification may consist of all the items placed after the head, notably prepositional phrases, nonfinite clauses, and relative clauses (Greenbaum & Quirk, 2007). Greenbaum and Quirk (2007) emphasized that premodification usually contain information with characteristic features while postmodification often comes in the form of a wh-relative clause or nonfinite clause. Therefore, the information contained within a postmodifier tends to be not as definite as the information contained within a premodifier. As Jonsson (2010) indicated, when it comes to relativizers, the most common ones are: which, who, whose, when, why, where, that, and whom whereas nonfinite clauses can be recognized by the -ed and -ing participle or by infinitive to clauses (Jonsson, 2010). It is also possible for a single head noun to contain more than one premodifier or postmodifier. The possible constructions of an NP can be summarized in the following chart.

NP				
(Limiter)	(Det)	(Premod)	Head	(Postmod)
AdvP	DET P	AP	noun	PP
		AdvP	pronoun	CL
		NP	proform	
only	the	rich	people	in this country

*(Adapted from Greenbaum & Quirk, 2007)*

AdvP: Adverb phrase	NP: Noun phrase
DET: Determiner	PP: Prepositional phrase
AP: Adjective phrase	CL: Clause
Premod: Premodifiers	Postmod: Postmodifiers

From a grammatical point of view, Gomez (2009) argued that the determiner (DET) is the most dependent in an NP because this dependent is mandatory in many instances (e.g. the dog, a dog, but \*dog is barking). According to Gomez (2009), a more detailed analysis of this position may reveal predeterminers (e.g. *both* these books) and postdeterminers (e.g. the *many* books you have). Apart from the determiner, premodifiers are optional elements in the noun phrase, given that their presence or absence does not affect the grammaticality of its structure (Gomez, 2009). Their purpose is to identify, classify and define the head noun. As can be seen in the earlier chart, a premodifer can be an adjective phrase, adverb phrase or even a noun phrase. Premodifiers tend to describe permanent features of the noun they modify. Given in different structural patterns, the syntactic function of an NP is also of variety. A noun phrase may function as a complement in clause structure, for example as subject (The professor is coming), object (We need a professor), predicative complement (she is my professor), or complements in prepositional phrases (She is in the garden). The syntactic function of an NP may potentially influence its function in construction of meaning in the discourse.

### 3. Method

#### 3.1. Corpus data

In order to find the answer to the research questions, a specialized corpus was constructed in June, 2017. This corpus consisted of 572874 words collected from 60 academic research articles of three topnotch journals in TESOL (TESOL Quarterly, TESOL Journal, and Journal of Second Language Writing). Since the paper aimed to explore the syntactic complexity of noun phrase constructions in TESOL academic research articles, texts were gathered primarily from three various journals in TESOL. These research articles were comprised of a variety of topics from different aspects of language teaching and learning, for example pronunciation, listening instruction, feedback, assessment, and EFL writing. All of the articles were published online. 20 of them were collected from TESOL Quarterly; 20 of them were gathered from TESOL Journal; the other 20 were elicited from Journal of Second Language Writing. All of three journals were topnotch journals in the field of TESOL, so these 60 articles were particularly typical in academic writing in the field of TESOL. They were latest articles published in three latest years, from 2015 to 2017. The articles included in the corpus can be divided into four types of primary research, as described in the following table.

**Table 1. Corpus description in number of words and types of research**

*(20 texts per sub-register)*

	<b>Theoretical</b>	<b>Quantitative</b>	<b>Qualitative</b>	<b>Mixed-method</b>	<b>Total</b>
Tesol Quarterly	-	70706	97459	30632	198797
Tesol Journal	37450	30124	61513	26239	155326

Journal of Second Language Writing	36757	67727	114267	-	218751
<b>Total</b>	74207	168557	<b>273239</b>	56871	<b>572874</b>

As described in Table 1, the corpus was divided into four types of research: theoretical, quantitative, qualitative, and mix-method. Different from an empirical study, theoretical articles do not present any observed data, but concentrate on “arguments to advance and explore theoretical concepts in the field” (Gray, 2013, p.157). According to Gray, qualitative research studies focus “on the observation and description of empirical data, whereas quantitative articles are numerically based” (2013, p.157). On the contrary, mix-method incorporates “elements of both qualitative and quantitative approaches” (Creswell, 2014, p.3). Every type of research can be seen as a ‘sub-register’ of academic research articles. It was worth noting from Table 1 that TESOL Quarterly did not cover any theoretical research. Likewise, Journal of Second Language Writing contained none of mixed-method research studies. Qualitative research seems to be most common and reaches a highest number of words (273239 words) out of the sub-registers.

### 3.2. Analytical procedure

POS tagging was added to my corpus using TagAnt 1.2.0 (Anthony, 2015). The purpose of this study was to explore the syntactic complexity of noun phrase constructions in the academic research articles and examine the function of noun phrases in construction of meaning in the discourse (texts). To address the first objective, I first generated a list of 20 highest frequency nouns from the corpus using wordlist tool in AntConc 3.3.4 (Anthony, 2014). Then, collocates tool was used to look at grammatical categories that possibly colligate with



each of these 20 nouns. Based on the sentential contexts of each occurrence, I analyzed the syntactic complexity of these 20 noun phrases in light of their pre-modifiers and postmodifiers reviewed in the literature. This analysis helped me explore the sophistication degree of noun phrase construction in TESOL academic research articles. Additionally, in order to address the second object, the Concordance tool in AntConc 3.3.4 (Anthony, 2014) was used to look at specific texts in which each of these noun phrases occurs. The Concordance tool provided many excerpts from the corpus that include these noun phrases and many others. On the basis of the excerpts, a further analysis was conducted to examine the function of noun phrases in construction of meaning in the discourse (texts).

#### 4. Results and discussion

Twenty most common nouns included in the corpus can be summarized in the following table according to the order of highest frequency. As Table 2 showed, the noun '*language*' occurred 7.75 times per thousand words in the corpus, reaching a highest frequency of the 20 nouns generated in the wordlist. Such nouns as '*students*', '*English*', '*teachers*' have relatively common occurrence rather than the other nouns in the list. Accordingly, the collocates of these nouns were first generated to investigate the syntactic complexity of noun phrases in the corpus.

**Table 2. First 20 highest-frequency nouns in the corpus**

No	Nouns	Freq	nf	No	Nouns	Freq	nf
1	language	4439	7.75	11	university	905	1.58
2	students	3829	6.68	12	classroom	870	1.52
3	English	2886	5.04	13	complexity	836	1.46
4	teachers	1892	3.30	14	class	762	1.33
5	research	1586	2.77	15	studies	760	1.33

6	study	1447	2.53	16	text	753	1.31
7	journal	1351	2.36	17	school	709	1.24
8	learners	1213	2.12	18	education	697	1.22
9	group	1119	1.95	19	participants	695	1.21
10	task	1005	1.75	20	skills	678	1.18

nf: normalized frequency (based on occurrences per thousand words) corpus:

572874 words

Table 3 (see next page) presented a variety of contexts in which these nouns occurred according to highest mutual information scores generated by the collocates tool in AntConc 3.3.4 (Anthony, 2014). The mutual information scores demonstrated the likelihood that the following nouns may appear within certain span of words. The particular span of words provided specific contexts in which each of the nouns occurred in the corpus. These contexts lay the foundation for the analysis of syntactic complexity of noun phrase constructions. The higher mutual information scores showed the higher probability that the words may occur together. Therefore, the mutual information scores enabled the researcher to generate most frequent constructions of these nouns from the list of collocates.

As depicted in Table 3, the noun ‘*language*’ may function as a head noun, premodifier or even a postmodifier, which results in a range of noun phrase constructions. In the example ‘*more than one language for particular purposes*’, ‘*language*’ functions as a head noun postmodified by a prepositional phrase. However, in the other examples, ‘*language*’ primarily functions as a pre-modifier in order to increase the complexity of those noun phrases. To give

an example, the structure of “even language forgetter”, “four language families” can be explained as a determiner + premodifier + head. Although the structure of the noun phrase “marginalization of *particular language varieties*” existed in form of a head + PP, in which its prepositional phrase (PP) seems to be more complex. This prepositional phrase was formed by a preposition and a relatively complex noun phrase (A + N + head). The complexity of its premodifier (NP) partly contributed to the complexity of the noun phrase in this prepositional phrase. The example “international students attended Texas college” showed that the complexity of this noun phrase construction depended heavily on its pre-modifier and postmodifier, particularly its post-modifier. Its structure can be described in form of premodifier (AP) + head + postmodifier (nonfinite CL, specifically –ed participle CL). All of the earlier examples attributed to the fact that the complexity of noun phrase constructions appears to be growing according to the intricacy of their premodifiers and postmodifiers. Most of the noun phrases in the earlier examples were built on the basis of complicated premodifiers and postmodifiers. Almost none of these noun phrases were constructed only by a head noun.

**Table 3. Specific contexts of first four nouns in the wordlist**

Nouns	MI score	specific contexts
		language 9.06 user, and even <u>language</u> forgetter
	8.06	in a graduate <u>language</u> teacher education
		<u>language</u> teacher, frequent traveller, <u>language</u> learner, and <u>Language</u> Teaching Research marginalization of particular <u>language</u> varieties to more than one <u>language</u>

for particular purposes to represent four language  
families

students	8.51	international students attended Texas college
English	8.66	British English
	8.34	English teaching
	7.92	to blame ‘the English’ vaguely/ Journal of English for Academic Purposes
teachers	8.99	teachers would/ other new teachers/ teachers may be unaware  teachers for English as an International Language Education

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MI score: mutual information score

The structures of noun phrases such as “English”, “teachers” also supported the earlier inference. As shown in Table 3 above, the noun “English” may function as either a premodifier or a head noun from time to time. In the phrases “British English”, “the English”, the noun “*English*” was regarded as a head. However, in the example “English teaching”, it functions as a premodifier to add meaning to the gerund “teaching”. The structure of the last examples “Journal of English for Academic Purposes”, “teachers for English as an International Language Education” appears to be much more sophisticated. “Journal” was the head of this noun phrase and was modified by a prepositional phrase whose head noun (‘English’) was also

postmodified by another prepositional phrase. Similarly, “teachers” was the head of that noun phrase, but was postmodified by a prepositional phrase which was also postmodified by another prepositional phrase. Such embedding structure largely contributes to the syntactic complexity of these noun phrases. Although two of the noun phrases given in Table 3 may include only a head noun such as “teachers”, this structure was not common. The majority of the noun phrases in Table 3 had a more complex structure. The complexity of these noun phrases depended primarily on the number of their premodifiers and postmodifiers. Complex postmodifiers tend to consist of more than one modifier per NP. Likewise, complex premodifiers contain more than one element per NP.

From the semantic point of view, the purpose of the complex premodifiers and postmodifiers was to add extra meaning to these noun phrases that might help construct various levels of meaning in academic research articles. As demonstrated in the following excerpt (Excerpt 1), noun phrases played an important part in constructing the central meaning of that text. Within a short paragraph, over 10 noun phrases in various structures could be found. Most of these noun phrases have at least one pre-modifier or one post-modifier. None of the noun phrases only included a head noun. The first noun phrase “the field of second language acquisition” functions as the subject of this sentence, aiming to convey the topic of the whole paragraph. Although an NP “mainstream SLA” was the only complement of a preposition, it enabled the writer to connect ideas between sentences. The other noun phrases were used to introduce and give examples of abstract concepts of second language acquisition. In a word, without noun phrases, it was almost impossible for the writer to create the links within and between sentences in this excerpt. We can say that the noun phrases might contribute to the construction of logical meanings in the text.

1) The field of second language acquisition (SLA) tends to focus on theoretical and methodological frameworks such as language socialization as well as task-based and pedagogical approaches in order to enhance language learning processes. *At the center of mainstream SLA* is the examination of cognitive processes such as input processing, skill acquisition, and interaction, which characterize language learning (VanPatten & Williams, 2014).

In the second excerpt, the structures of noun phrases appear to be less of complexity. Two of these noun phrases only comprised a head noun, but the majority of noun phrases included post-modifiers (PP or CL) and pre-modifiers (NP or AP). These modifiers added extra layer of information to the head noun.

2) I believe the purpose of education is to equip students with the knowledge, skills, and tools they need to become citizens of a global society. To do **this**, I aim to motivate students not only intellectually but also socially, encouraging **them** to be more empathetic to differences and challenging **them** to think critically. Through class discussions and learning about different cultures, I hope my students analyze their personal beliefs about important everyday issues and what foundations those beliefs are based on. **This reflection** will allow **them** to better respect themselves and strengthen their own beliefs while at the same time being open to differences they might encounter.

Similar to the first excerpt, a set of ideas conveyed in Excerpt 2 were well connected by means of noun phrases. The repetition of noun phrases such as ‘students’, ‘my students’, ‘their personal beliefs’, ‘those beliefs’, ‘this reflection’, ‘differences they might encounter’ aimed to increase lexical linking within and between sentences in this text. It was obvious that the writer

made use of these noun phrases to increase cohesion within the text, as an alternative to grammatical devices. Meanwhile, the use of noun phrases created a logical organization of ideas that make sense to the readers.

The other nouns which had a lower frequency of occurrence were also examined to further explore the syntactic complexity of noun phrases in academic research articles. As manifested in Table 4 below, the mutual information scores indicated the likelihood of these noun phrases' occurrence in the corpus.

**Table 4. Specific contexts of the other nouns in the wordlist Nouns**

**MI**

	<b>score</b>	<b>Specific contexts</b>
research	10.55	low investment in research
	9.55	have witnessed an upsurge in research
		Meanwhile, gesture research unambiguously points to
		Her research focuses .... / guide to classroom research
		Remain the biggest spender on research
study	9.68	a sociopolitically-oriented case study
		the shipboard based study
journal	9.78	journal of pragmatics/ journal of second language
		each journal in its indexes
learners	9.93	the learners/ this means that learners are urged to...
		through which the learners understand
		to help the learners progressively understand
group	10.05	small group/ one group/ a group

		the interactive group would outperform/ dramatizing group
task	10.20	an almost unsurmountable task/ manipulating task  the relationship between task complexity  accomplishing the task/ error correction task
university	10.35	Waseda university
classroom	10.41	a potentially testable in classroom settings  to our flipped classroom/ formal traditional English classroom  the decision to omit classroom observation
complexity	10.47	writing complexity/ a meaning-based theorization of complexity  the lexical and syntactic complexity  computational tools for automating syntactic complexity
class	10.60	the class/ this class/ class conversations/ students in each class
studies	10.61	vitro studies/ fluency in studies/ intercultural acquisition studies
text	10.62	effects of source text summarizability  summary for the text they preread  tagging which also lemmatizes the text
school	11.71	an English conversation school/ state school officers



education	10.73	journal of education/ course for general education
participants	10.73	the participants/ vocational high school participants seventy participants
skills	10.77	advanced English skills more abstract and decontextualizing writing skills

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MI score: mutual information score

In order to have a more accurate result, the researcher extracted the collocates with highest mutual information scores from each of the earlier nouns. The collocates of the noun ‘research’ provided relatively simple noun phrase constructions. Most of these noun phrases were constructed by a premodifier, a head, and finally a postmodifier, for example “low investment in research, premod (AP) - head - postmod (PP)”, “an upsurge in research, DET - head - postmod (PP)”, “classroom research/gesture research, premod (NP) - head”, “the biggest spender on research, DET + premod (AP) - head - postmod (PP)”. The highest mutual information score revealed that the construction “low investment in research” was most frequent out of the constructions colligated with the noun “research”. The discussion showed that the structure “premod + head + postmod” seems to appear most regularly.

The structure “premod + head + postmod” was also applicable to the other noun phrases extracted from the collocates of the noun ‘study’. However, the premodifier of an NP “a sociopolitically-oriented case study” was more complicated because it was constructed by an AP (‘sophistically-oriented, Adv – Adj’) and an NP (‘case’). Likewise, the complexity of “the shipboard-based study” was increased by the use of an AP pre-modifier (‘shipboard-based, N-

Adj'). The sophistication degree of such noun phrases as "Journal of pragmatics", "Journal of Second Language" was achieved by its PP postmodifier. On the contrary, the intricacy of noun phrases "the interactive group", "dramatizing group" was dependent on its AP premodifier. The majority of noun phrases in Table 4 above have more than one pre-modifier as well as more than one post-modifier. Only few of them were constructed only by a determiner and a head noun. The discussion implied that most of noun phrases in Table 4 were highly sophisticated. The complexity of these constructions appears to be growing in the complexity of their premodifiers and postmodifiers.

This conclusion was strongly supported in the following excerpt (Excerpt 4). A variety of noun phrases were created to carry the central meaning of the whole paragraph. The use of a substantial number of premodifiers and postmodifiers resulted in considerable complexity of noun phrases. For example, an NP "the identity literature examined in this article" was premodified by an NP, and postmodified by a nonfinite clause (-ed participle CL). Another NP "readings from .....2014" was much more complicated as this noun phrase was postmodified by a very complex prepositional phrase (P+ NP [NP + that- CL]). Such embedding structure results in increasing complexity of noun phrase constructions. As can be seen in Excerpt 4, the majority of noun phrases in this excerpt may reach the highest complexity because many of them possessed more than one element as post-modifiers or embedding post-modifiers. Several of the postmodifiers were in form of an embedding prepositional phrase, nonfinite clauses (e.g. ed-participle CL, to- inf CL), and relative clauses (e.g. that-CL).

4) Even though the identity literature examined in this article was gathered using a variety of databases and gleaned from readings from a course on identity and ideology that Kinsey and Laurel took with Peter in the spring of 2014, we concede our bias here. First, as teachers with our own teaching philosophies, personal experiences, and professional goals, our

interpretations of research are influenced by these same experiences that make us unique. These unique experiences are demonstrated in the philosophies delineated above; whereas Kinsey’s professional practice focuses on forging empathy and respect, Laurel’s practice is governed by her desire to motivate her students.

Most of noun phrases in Excerpt 4 above function as a direct object or object of a prepositional phrase. From the semantic perspective, these noun phrases enabled the writer to provide further explanation on the issues mentioned earlier. Moreover, some of them such as “these unique experiences”, “our bias”, were used to connect ideas between adjacent sentences within the text. In other words, the noun phrases of this excerpt helped the writer to expand the meaningmaking of the text and ensure coherence within the text as well. Similarly, in addition to these functions, noun phrases found in Excerpt 5 below helped the writer to move the discussion forward in a new paragraph, for example “to emphasize *the need to put **learners** at the center of the teaching enterprise*, we start *the next section* with the summarized philosophies of the first two authors of this article...”.

5) Also taking into consideration how learners’ identities evolve over time, Darwin and Norton’s (2015) updated model of investment brings together the key constructs of identity, ideology, and capital to underscore the fluidity of identity development and the need to study **learner** trajectories. Put simply, knowing where **learners** have been in the past, where they are in our classrooms right now, and where they want to be in the future can inform our pedagogy. To emphasize the need to put **learners** at the center of the teaching enterprise, we start the next section with the summarized philosophies of the first two authors of this article, who themselves are newly minted MA TESOL graduates and current teachers of English as a second or foreign language (ESL/EFL).

Some of them were constructed in order to introduce new topics in the text, for instance “learners’ identities”, “the key constructs of...capital”, “the need to study learner trajectories”. We can say that these noun phrases helped to increase the complex meaning of the text as the constructions of these noun phrases were of great complexity. There were more than one premodifier and more than one post-modifier per NP. Their premodifiers were comprised of several elements such as determiner, adverb, adjective, and another noun. Their postmodifiers consisted of either a nonfinite clause (‘to-inf CL’) or a relative clause (‘Wh-CL’). The complexity of these noun phrase constructions contributed to the meaning complexity in the text. It goes without saying that this excerpt would not make sense to the readers at lower level of English proficiency. The complexity of these noun phrases resulted in the complexity of meaning, that is, the text connected with various levels of meaning.

## **5. Conclusion**

This project contributed to our understanding of the syntactic complexity and semantic function of noun phrases in TESOL academic research articles. The findings showed that the majority of noun phrases in academic research articles included in the corpus were constructed on the basis of more than premodifier and postmodifier. The complexity of noun phrases appears to be growing in the number of their premodifiers and postmodifiers. The most predominant construction found in the corpus was “premod + head + postmod”, of which postmodifiers often contained more than one element, embedding prepositional phrases, nonfinite clauses, or relative clauses. Concurrently, the findings also pointed out that the complexity of these noun phrases contributed to the construction of meaning in the texts. The

use of noun phrases enabled the writer to connect a set of ideas within and between sentences in the text. The repetition of noun phrases increased lexical linking across the text, and therefore developed cohesion within the text, as an alternative to grammatical cohesive devices. Meanwhile, the use of noun phrases in the research articles created a logical organization of ideas that make sense to the readers. From the pedagogical perspective, these findings were of value to both L2 learners and even young scholars in the field. To L2 learners, it is very important to enhance the knowledge of and the ability to develop the complexity of noun phrases, for example how to add premodifiers and postmodifiers to a head noun accurately, or how to construct embedding prepositional phrases, nonfinite clauses, and relative clauses to develop various layers of meaning for the head noun. Moreover, L2 learners tend to connect ideas within and between clauses by grammatical devices, so it is of necessity to pay much more attention to using noun phrases to link ideas across the text. To young scholars, the understanding of the syntactic complexity of noun phrases may help them improve syntactic complexity of various sentence patterns. The understanding of the semantic function of noun phrases in the research articles may help them increase cohesion as well as coherence within the article to have more logical organizational pattern. The findings, therefore, enable young learners to improve their writing performance for the target journals in the field. Despite its value, the study still had many limitations. Within a short time, the corpus collected was not large enough to ensure representativeness and balance. The researcher only analyzed 20 highest frequency nouns in the corpus, so it is hard to generalize the result. Although there were four primary sub-registers of the academic research articles in TESOL, the researcher did not concentrate on the analysis of each sub-register separately. Accordingly, in order to gain a deeper insight into the issue, the future corpus should include more articles. The central focus should be on the most popular sub-registers (qualitative vs. quantitative). Additionally, it would

be of value to use multidimensional analysis model to investigate syntactic complexity or organizational patterns between sub-registers.

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